

# The Athenian Mercury.

Saturday, October 5. 1695.

Quest. 1. **Y**OU are desired with what speed you can to answer the following question, viz.

*How a man these hard times may get 500 l. a year honestly? Pray fail not to give an answer, for the querist is in great haste.*

*Ans.* No doubt on't, such an estate is a pretty thing, but so difficultly got, friend, with a good conscience, that we believe it generally next to impossible, nor have we yet found the secret on't. However, we believe honesty and charity will confer a greater felicity, on any man who practices these two excellent qualities, than such an estate without 'em can do; and to our comfort these every one may possess tho he wants the other.

Quest. 2. *Having lately read in one of the books of Dea's Euclid, something concerning perfect numbers, and it not being in my Capacity (being but a young student) to comprehend the true notion thereof; I beg your assistance in it, so far as to satisfy what they are, and by what means I may find any one of them out, for I find them to be of great use to me, and in so doing you'll highly oblige your friend, &c.*

*Ans.* A perfect number is that which is equal to all its aliquot parts added together; according to this definition 6 is a perfect number, because if you take its aliquot parts which are 1, 2, 3, their sum will be equal to 6, again 28 is a perfect number because its aliquot parts 1, 2, 4, 7, 14 added together make 28. Now if you will find as many of 'em as you please, take the following progression 1, 2, 4, 8, 16, 32, &c. which it is easy to continue in doubling every last term, chuse in this progression any one term, subtract unity from it, if the remainder is a prime number, multiply this remainder by the term immediately preceeding, the product will be a perfect number; but if the remainder is no prime number you must chuse another term; this rule will be clear'd by some instances; take the term 4, subtract unity from it, the remainder is 3, which being multiply'd by the term immediately preceeding, viz. 2, the product 6 is a perfect number; again take the term 8, subtract unity from it, the remainder is 7, multiply this remainder by 4, the product is 28 which is a perfect number, But if you would take 16, because having taken unity from 16, the remainder 15 is no prime number, the product of 15 by 8 won't be a perfect number; therefore take the following term 32, and working as is prescrib'd, you will find 496 for another perfect number. This is a very easy rule, and we expect our querist will be pleas'd with it, but we have something of far greater consequence to tell him, which is, that we guessing by his question that he is apt to attribute some virtue to perfect numbers (or else why should he think they can be of great use to him?) and this Doctrine of attributing virtue to numbers being a pure Chimera of Caballistick spirits, we advise him to employ his time better, than in such a vain fruitless contemplation.

Quest. 3. *We would desire you to solve this query because we have laid a considerable wager concerning it, suppose a pipe to be 120 foot long and the Air to be exhausted out of it, whether the water would ascend into it any higher than 30 foot.*

*Ans.* Quicksilver in such a pipe ascends to about 28 inches, and no more; now quicksilver is reckon'd 14 times heavier than water, therefore water would ascend 14 times higher than quicksilver and no more, that is about 32 foot and 8 inches.

Quest. 4. *If in an Arithmetic progression from unity, the last number be thirty six, and the sum of all the numbers be one hundred and forty eight, how many terms are there in all?*

Quest. 2. *And if eight numbers be in Arithmetical proportion from unity, the last term thirty six, what is their common difference? And how may these two be discovered and resolved?*

*Ans.* In the first question the number of terms is eight. And in the second the difference is five; both resolved by this method, let,  $a$ , be equal to the first term,  $t$ , equal to the last term,  $n$ , equal to the number of terms,  $d$ , equal to the difference, and,  $s$ , equal to the sum of all the terms: Then by this theorem  $s = \frac{1}{2} an + \frac{1}{2} nt$ , it will be found  $n = \frac{2s}{a+t}$  and

$s$ ,  $a$ , and  $t$ , being already given,  $n$  will be discovered to be equal to eight, the number of terms sought. And in the second question where the difference of terms is required,  $t$ ,  $a$ ,  $n$ , being given, by this theorem,  $t = a + dn = d$ , it will be  $d = \frac{t-a}{n-1} = 5$ , equal to the difference.

Quest. 5. *I sent this question 4 or 5 several times, but never had your answer, which makes me send it once more to refresh your memories; I beg you would not refuse me still.*

*Qu.* We find in the Copernican system 3 motions annexed to the Earth, viz. An Annual, Diurnal, and an inclining position, which is by him term'd Motus Inclinationis, *Qu.* Why might not a perpendicular or Coincident Position have been as well introduced by this Astronomer, and what absurdities would follow the assertion of either?

*Ans.* The Motus inclinationis is not properly a motion, 't is only a perpetual Parallelism that the Axis of the Earth keeps with its self, which is moving in the Ecliptic; to conceive this well, take a common sphere, that shall represent the firmament; upon the Ecliptic of which turning a little Globe so that its Axis be constantly parallel to the Axis of the world, and you shall have a true Idea of this Motus inclinationis; it has been invented to give a reason of the diversity of seasons; and to explain as in the common system, the continual increasing of days from the Winters Solstice to the Summers, and their decreasing in the same order as they have increas'd: but if you will know further how this parallelism of the Earth's Axis may cause all these appearances, and why they happen to be the same as in the common system, we will answer you, that it is a matter of some difficulty to be understood in such short discourses as these are intended to be; however, not quite to disappoint an honest querist who may be is somewhat uneasy, we will tell you that the whole diversity of days in the Ptolemaic system proceeds from the diversity of parallels that the Sun describes every day; now according as these parallels are more or less remote from the Equator, the Angle comprehended by a ray drawn from the center of the Sun to the center of the Earth, and by the Axis of the world, changes accordingly: for instance, the Sun being in the Equator, this Angle is right, but if it is in the Tropic of Cancer it makes an Angle of 67 Degrees (measuring the Angle from the North) then if the parallel is given the Angle made with the ray and the Axis is given also; and reciprocally, if the Angle is given, the parallel is given: now in the Copernican system the Axis of the Earth being parallel to the Axis of the World, the Angle comprehended by such a ray as we have suppos'd, and by the Axis of the Earth, is the same as was in the Ptolemaic system, therefore the parallel described, or rather that which seems to be described, is the same, then the appearance is the same.

Quest.



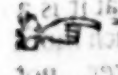
Quest. 6. A friend of mine went lately to the Play House in Salisbury-Court, where the beauty of a young Lady of Quality has so changed his Temper, that of a free Airy Companion, he is become the most reserved and melancholy brute in the whole Creation; your advice or Rally is desired in hopes 'twill rouse him from this Lethargick Madness, which now so intirely possesses him, that tho' he really is a man of good Birth, Estate, Education, Person and Sense, yet he cannot be persuaded to attack this fair unmarried Lady; but rather out of modestly smothers this new-born Passion in his own breast, which has already rob'd me of a very good Companion, and therefore 'tis I take the liberty of giving you this trouble.

Ans. Now is the time for complaisance civility, and all that on your part, you can't do less then be in love too that you may become a fit companion for him, to whom we believe our advice would be very useless, love at first sight is such a kind of a senseless thing, that to such as entertain it, reason will be but an unwelcome guest. Besides, there is but two ways for him to take, of which he can't be ignorant, either to tell his grief to his fair saint, and receive his doom from her mouth, or else to permit his passion silently to expire. Good fortune may make him happy in the first, but time will certainly do it in the last.

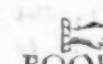
Quest. 7. I have suffered very much these Wars by the French Privateers, and am of opinion 'tis a way of living not warranted by the Laws of God, tho' it be so much Authorized by Lewis the 14th, Grand Tyrant of France, If I live long enough to see times of peace; As I rise the Sea, I really desire to take and Plunder as many French Ships as I shall happen to meet with, and can conquer until my Lessee are made good, and no farther; I Pray your judgments as to the first, and shall govern my self as you shall direct in the latter, and humbly pray your answer in both as soon as you please in one of your Mercuries. In the mean time I am yours, &c.

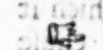
Ans. If by asking our opinion of the first, you would know what we think of Privateering in general; tho' our thoughts mayn't be of any service in such a case, yet since they'll gratify you, and can do no harm, we'll tell you. We look upon it to be very different in times of Peace and War; for when any Prince is at War with another Nation if despoiling and weakening this Enemy at Land is Lawful, which no body disputes, 'tis doubtless the same at Sea; but in peace it is not justifiable, in him; nor do we think it lawful for private persons merely on their own accounts at any time. As for your case, tho' its very bad, yet we think the course you intend to take to right your self something dishonest. Now whilst we are at War with the French, if you can serve both the publick and your self by impoverishing them, either by Commission in his Majesties Ships, or otherwise, 'twould be very hard to refuse you the advantage of it.

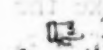
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